

<b>Interview Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/685,608	FORTUNA, RUDOLPH S.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mark T. Le	3617	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Mark T. Le. (3) \_\_\_\_\_  
 (2) John Harbst. (4) \_\_\_\_\_

Date of Interview: 21 October 2004.

Type: a) ☐ Telephonic b) ☐ Video Conference  
 c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.  
 If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: 1.

Identification of prior art discussed: Dohr '359 and Stevens '501.

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.


Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: see attachment  
Claim 1, as proposed, appeared to be defined over the ground of rejection set forth in the previous Office action (Dohr in view of Stevens). However, a final patentability determination will be made upon receiving a formal amendment.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

\* attachment: Proposed amendment "A"

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

  
 Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of: Rudolph S. Fortuna )

**PATENT APPLICATION**

Serial No.: 10/685,608 )


Examiner: M. Le

Filed: October 15, 2003 )

Group Art Unit: 3617

For: RAILROAD HOPPER CAR  
DISCHARGE GATE ASSEMBLY )

Confirmation No.: 5108

 **AMENDMENT "A"**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Responding to a September 2, 2004 Office Action, kindly amend the above-identified  
patent application as follows:

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**IN THE SPECIFICATION:**

Please amend Paragraph [0016] as follows:

**[0016]** According to another aspect of the invention, there is provided a railroad hopper car discharge gate assembly including a frame having a pair of spaced, generally parallel side frame members and a pair of spaced, generally parallel end frame members fixed between the side frame members to define a ledgeless discharge outlet for the gate assembly. A gate is adapted for sliding endwise movements along a predetermined path of travel between closed and open positions relative to the discharge opening defined by the gate assembly frame. The gate includes upper and lower generally parallel surfaces. In an area surrounding peripheral edges of the gate, the side frame members and the end frame members each have a first leg portion or wall structure and a second apertured leg or flange portion extending in generally normal relation away from the first leg portion. The spacing between the first leg portions wall structures of the side frame members and the end frame members being such that the ledgeless discharge outlet for the gate assembly measures about 1740 square inches. The gate assembly frame further includes laterally spaced support members disposed generally parallel to the side frame members and extending between the end frame members in sliding engagement with the lower surface of and for supporting the gate in the closed position against columnar load adapted to be exerted against the upper surface of the gate. The side frame members extend away from the discharge outlet for the gate assembly and are configured to support the gate when the gate is moved to the open position.

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Please amend Paragraph [0018] as follows:

**[0018]** According to still another aspect of the invention, there is provided a gate assembly adapted to be secured in material receiving relation relative to a standard opening defined toward a bottom of a railroad hopper car. According to this aspect of the invention, the gate assembly includes a rigid frame having a longitudinal axis and including a series of side frame members and end frame members which are spaced relative to each other and configured to provide said frame with a ledgeless and generally ~~rectangular~~ square discharge opening sized substantially equivalent to the standard opening defined toward the bottom of the railroad hopper car whereby allowing commodity discharged from the standard opening at the bottom of the railcar to pass through the gate assembly in a substantially unhindered fashion thereby promoting the discharge of commodity from the railcar. Each side frame member and end frame member defines a series of apertures which combine to define a bolting pattern generally corresponding to a standard bolting pattern surrounding the standard opening toward the bottom of the railroad hopper car whereby facilitating securement of the gate assembly to the railroad hopper car. The ledgeless frame further includes a generally centralized support extending generally parallel to the longitudinal axis of the frame with two additional supports disposed to opposed sides of the centralized support. A gate is slidably mounted for endwise movements between open and closed positions relative to the ledgeless opening defined by the frame and along a generally linear path of movement for controlling discharge of commodity through the ledgeless opening. The gate is supported by the supports on the frame when in the closed position and supported by frame

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extensions when moved to the open position.

Please amend Paragraph [0024] as follows:

[0024] In a preferred form, each side frame member and end frame member of the gate assembly frame is provided with a first leg portion or wall structure and a second apertured leg or flange portion extending in general normal relation relative to each other. The end frame members and the side frame members of the gate assembly are preferably configured to add strength and rigidity to the gate assembly frame to withstand the increased loading placed thereon by the significantly increased size of the discharge opening in the gate assembly. That is, each end frame member and each side frame member of the gate assembly further includes a another flange or third leg portion joined to and disposed toward another end of the wall structure and extending in generally normal relation away from the other flange or first leg portion, with the third leg or flange portion being spaced from but extending in the same direction as and in generally parallel, relation with the second leg or flange portion to minimize the section modulus of the gate assembly frame. In a most preferred form, the third leg or lower flange portion of the side frame and end frame members are arranged generally coplanar relative to each other. Moreover, the spacing between the second and third leg or flange portions of the side frame members is such that the cam structure provided on the operating shaft assembly traverses a path of rotation which is confined within the spacing provided therebetween.

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Please amend Paragraph [0049] as follows:

[0049] Turning to FIGS. 3 and 4, each gate assembly 30 includes a rigid frame 32 having a longitudinal axis 33. The gate assembly frame 32 is formed of a pair of generally parallel side frame members 34, 35 and a pair of generally parallel end frame members 36, 37 fixed between the side frame members 34, 35. The side frame members 34, 35 and end frame members 36, 37, in combination, define a generally ~~rectangular~~ square and ledgeless discharge opening 40 therebetween.

Please amend Paragraph [0051] as follows:

[0051] As shown in FIG. 2, side frame member 34 includes a first, generally planar leg portion or wall structure 42 and a second leg portion 44 disposed toward one end of and extending in generally normal relation relative to and away from the wall structure or first leg portion 42. The second leg or flange portion 44 defines a series of side-by-side openings or holes 46. To add further rigidity and stiffness thereto, the side frame member 34 further includes a third leg or flange portion 48 disposed toward an opposite end of and extending in generally normal relation and away from the wall structure or first leg portion 42. As shown, the third leg or flange portion 48 is spaced from but extends in the same direction and in generally parallel relation with the second leg or flange portion 44. Preferably, the first, second and third leg portions 42, 44 and 48, respectively, are integrally formed with each other. In a preferred form, the first and third leg or flange portions of side frame member 34 are spaced apart by a distance of about 9.0 inches.

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Please amend Paragraph [0052] as follows:

**[0052]** As shown in FIG. 5, end frame member 36 includes a first, generally planar leg portion or wall structure 52 and a second leg or flange portion 54 disposed toward one end of and extending in generally normal relation relative to and away from the wall structure or first leg portion 52. As shown, the second leg or flange portion 54 defines a series of side-by-side openings or holes 56. Suffice it to say, the holes or openings 46 in the side frame members 34, 35 combine with the holes or openings 56 in the end frame members 36, 37 to define a standard bolting pattern which corresponds to the standard bolting pattern on the mounting flange 20 of the hopper 12. In the illustrated embodiment, suitable fasteners 59 pass through the openings 22 in the hopper mounting flange 20 and through the openings 46, 56 in the gate assembly frame 32 to secure the gate assembly 30 to hopper 12.

Please amend Paragraph [0053] as follows:

**[0053]** To add further rigidity and stiffness thereto, the end frame member 36 further includes a third leg or flange portion 58 disposed toward an opposite end of and extending in generally normal relation away from the wall structure or first leg portion 52. As shown, the third leg or flange portion 58 is spaced from but extends in the same direction and in generally parallel relation with the second leg or flange portion 54. Preferably, the first, second and third leg portions 52, 54 and 58 of the end frame member 36 are integrally formed with each other. In the preferred embodiment, the third leg or flange portion 48 of the side frame members 34, 35 are



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arranged in generally coplanar relationship with the third leg or flange portion 58 of the end frame members 36, 37 whereby facilitating attachment of a conventional unloading boot or the like to the gate assembly 30.

Please amend Paragraph [0054] as follows:

[0054] According to the present invention, the lateral spacing disposed between an inner surface of the generally planar wall structures or first leg portions 42 of the side frame members 34 and 35 preferably ranges between about 37.5 inches to about 44 inches. In a most preferred embodiment, the lateral spacing disposed between an inner surface of the generally planar wall structures or first leg portions 42 of the side frame members 34 and 36 measures about 43.5 inches. The longitudinal spacing disposed between an inner surface of the generally planar wall structures or first leg portions 52 of the end frame members 35 and 37 preferably ranges between about 37.5 inches to about 46 inches. In a most preferred embodiment, the longitudinal spacing disposed between an inner surface of the generally planar wall structures or first leg portions 52 of the end frame members 36 and 37 measures about 45.5 inches so as to provide the discharge opening 40 with a generally square configuration.

Please amend Paragraph [0055] as follows:

[0055] A gate 60 of a size generally corresponding to that of the ledgeless discharge opening 40 is mounted for sliding movements between closed and open positions along a linear

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predetermined path of movement for controlling the discharge of commodity from hopper 12

(FIG. 1). As shown in FIGS. 2 and 3, the predetermined path of movement or travel of gate 60 is disposed in vertically spaced relation below the upper flange portions 44 and 54 on the side frame members 34, 35 and end frame members 36, 37, respectively, of the gate assembly frame structure

32. As shown in FIG. 6, gate 60 has a planar configuration and includes a first or upper surface 62 and a second or lower surface 64 extending generally parallel relative to each other.

Please amend Paragraph [0059] as follows:

[0059] As shown in FIGS. 2 and 5, seal structure 90 is preferably carried on the gate assembly frame 32 for inhibiting debris and insect infiltration between the frame 32 and the gate 60. In the illustrated embodiment, seal structure 90 is arranged relative to a periphery of the gate 60 when gate 60 is in the closed position. In the exemplary embodiment, and as shown in FIGS. 2 and 3, seal structure 90 includes a hollow mounting 92 secured to the side frame members and end frame members 34, 35 and 36, 37, respectively, of the gate assembly frame 32 in vertically spaced relation below the upper flange portions 44 and 54 of the side frame members and end frame members 34, 35 and 36, 37, respectively. The hollow mounting 92 is specifically configured to allow commodity discharged from the hopper 12 of railcar 10 to readily pass thereover. Moreover, structure 90 includes a conventional carpet seal 94, or other suitable seal, accommodated preferably within the mounting 92, and configured to sealingly engage about the periphery of the upper surface 62 of and after gate 60 moved to a closed position.

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Please amend Paragraph [0092] as follows:

[0092] The gate assembly 30 is furthermore configured with a frame 32 capable of withstanding significantly increased net columnar loading, as compared to conventional gate assemblies, coupled with advantageously offering a reduced cumulative distance between an upper surface of the second leg portion 44 on the gate assembly frame 32 and the lowermost surface on the third leg portion 46 of the gate assembly frame 32 compared to conventional gate assemblies. Accordingly, and after securing it to the hopper car 10, the gate assembly 30 of the present invention offers increased clearance beneath a lowermost surface thereof. Offering such an advantage has been recognized through the elimination of the transition wall section normally associated with railroad hopper-type gate assemblies and a unique gate assembly design offering a discharge opening 40 generally corresponding to the standard opening 18 on the hopper car 10. Although configured to withstand the significantly increased net columnar loading, as compared to conventional gate assemblies, the frame members 34, 35 and 36, 37 of the gate assembly frame 32 are advantageously designed such that the path traversed by the peripheral edge of the cam structure 42 is embraced within limits defined by the second and third leg or flange portions 44, 48 and 54, 58 thereof whereby promoting attachment of a conventional discharge boot to the underside of the gate assembly frame 32. In a preferred form, the leg or flange portions 44, 48 and 54, 58 of frame members 34, 35 and 36, 37, respectively, are separated by a distance of about 9.0 inches.

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**IN THE CLAIMS:**

1. (Currently Amended) A railroad hopper car discharge gate assembly, comprising:  
  
a rigid frame configured with a generally ~~rectangular~~ square and ledgeless discharge opening greater than 1600 square inches whereby allowing for rapid discharge of commodity therethrough, with a gate having a an upper surface defining an area generally equivalent to the size of the discharge opening and being mounted on said frame for generally linear movements in a predetermined plane between a closed position, wherein said gate prevents flow of commodity through said discharge opening and, and an open position, and wherein said frame is further configured to inhibit bending of said frame and said door under columnar loading adapted to be applied to the greater than 1600 square inches of surface area defined by said gate and which is exposed to commodity carried by a railcar to which said gate assembly is adapted to be operably coupled, with said frame including an upper flange extending outwardly and about a periphery of said frame for facilitating connection of said gate assembly to a hopper of a railroad car, said frame further including wall structure rigidly connected to and depending from said upper flange, and wherein said predetermined plane of movement of said gate is disposed in vertically spaced relation below said upper flange;  
  
seal structure arranged in sealing engagement with a peripheral edge on the upper surface of said gate when the gate is in the closed position, with said seal structure being carried by said frame in vertically spaced relation below said upper flange and configured to promote movement of said commodity therepast when said gate is moved toward said open position;

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an operating shaft assembly supported by opposed frame extensions for rotation about a fixed axis, with said operating shaft assembly being operably coupled to said gate; and

a lock assembly operable in timed relation relative to rotation of said operating shaft assembly, said lock assembly including a stop which, when said gate is in the closed position, positively engages with the gate thereby preventing inadvertent movement of said gate toward the open position and which is operably removed from the path of movement of the gate prior to said gate being positively moved under the influence of said operating shaft assembly moved toward the open position.

2. (Canceled)

3. (Currently Amended) The railroad hopper car discharge gate assembly according to Claim 1 wherein said frame further includes a plurality of laterally spaced support members arranged in generally parallel relation relative to the direction in which said gate moves between the open and closed positions for limiting deflection of said gate and increasing stiffness of said frame.

4. (Original) The railroad hopper car discharge gate assembly according to Claim 3 wherein each of said support members is provided with material for enhancing the ability of the gate to slide thereover as said gate moves between the closed and open positions.

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5. (Original) The railroad hopper car discharge gate assembly according to Claim 1 wherein said operating shaft assembly is operably coupled to said gate through pinions mounted on a shaft rotatable about said fixed axis, with said pinions being arranged in intermeshing relation with racks carried by said gate.
6. (Original) The railroad hopper car discharge gate assembly according to Claim 5 wherein said frame further includes structure for limiting deflection of the shaft of said operating shaft assembly relative to said fixed axis when said shaft is rotated to move said gate toward the open position.
7. (Original) The railroad hopper car discharge gate assembly according to Claim 1 wherein the stop of said lock assembly is urged into releasable engagement with said gate.
8. (Original) The railroad hopper car discharge gate assembly according to Claim 1 wherein a mechanical system is provided between the stop of said lock assembly and said operating shaft assembly for positively displacing said stop from engagement with said gate upon rotation of said operating shaft assembly and prior to movement of said gate toward the open position.
9. (Original) The railroad hopper car discharge gate assembly according to Claim 8

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further including a lost motion mechanism which collapses upon rotation of the operating shaft assembly in a direction to move the gate toward the open position whereafter said operating shaft assembly is operably coupled to said gate.

10. (Currently Amended) A railroad hopper car discharge gate assembly, comprising:

a frame including a pair of spaced, generally parallel side frame members and a pair of spaced, generally parallel end frame members fixed between said side frame members to define a ledgeless discharge outlet for said gate assembly;

a gate adapted for sliding endwise movements along a predetermined path of travel between closed and open positions, with said gate including upper and lower generally parallel surfaces;

and wherein, in an area surrounding peripheral edges of said gate, said side frame members and said end frame members each ~~have a first leg portion~~ having wall structure and a ~~second apertured leg~~ first flange portion joined to and extending in generally normal relation away from ~~said first leg portion~~ an upper end of said wall structure, with the spacing between the ~~first leg portions~~ wall structures of said side frame members and said end frame members being generally equal such that the ledgeless discharge outlet for said gate assembly has a generally square configuration and ranges in size between about 1400 and about 1760 square inches, with said frame further including laterally spaced support members disposed generally parallel to said side frame members and between said end frame members in sliding engagement with the lower

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surface of and for supporting the gate in the closed position against columnar load adapted to be exerted against the upper surface of said gate, with the predetermined path of travel of said gate being disposed in vertically spaced relation below the upper flange on said side frame members and said end frame members, and wherein said side frame members, said end frame members, and said support members are configured to withstand columnar loading adapted to be applied the upper surface of said gate, corresponding in cross-sectional size to the cross-sectional area of said generally square discharge opening, and wherein said side frame members extend away from the discharge outlet for said gate assembly and are configured to support said gate when said gate is moved to an open position;

seal structure arranged in sealing engagement with a peripheral edge on the upper surface of said gate when the gate is in the closed position, with said seal structure being carried by said frame in vertically spaced relation below the flange on said side frame members and said end frame members and configured to promote movement of said commodity therepast when said gate is moved toward said open position;

an operating shaft assembly carried by said side frame members for rotational movement about a fixed axis, said operating shaft assembly being operably coupled to said gate; and

a lock assembly including a displaceable stop operable in timed relation relative to rotation of said operating shaft assembly for preventing inadvertent movement of said gate toward the open position and which is operably removed from the path of movement of the gate prior to said gate being positively moved under the influence of said operating shaft assembly moved toward



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the open position.

11. Canceled.

12. (Original) The railroad hopper car discharge gate assembly according to Claim 10 wherein said support members include a first support member extending generally along a longitudinal centerline of said gate assembly along with second and third support members disposed to opposite lateral sides of the longitudinal centerline of said gate assembly.

13. (Original) The railroad hopper car discharge gate assembly according to Claim 12 wherein each support member is provided with material for enhancing the ability of the gate to slide thereover as said gate moves between the closed and open positions.

14. (Original) The railroad hopper car discharge gate assembly according to Claim 10 wherein said operating shaft assembly is operably coupled to said gate through pinions mounted on a shaft rotatable about said fixed axis, with said pinions being arranged in intermeshing relation with racks mounted on the lower surface of said gate.

15. (Original) The railroad hopper car discharge gate assembly according to Claim 14 wherein said operating shaft extends transversely across the predetermined path of travel of said

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gate and includes capstans arranged at opposite ends thereof, said capstans being disposed for engagement from either side of said gate assembly.

16. (Original) The railroad hopper car discharge gate assembly according to Claim 15 wherein said frame further includes structure arranged along the length of said operating shaft for minimizing the effect high torque requirements inputted to said operating shaft assembly have on operation of said gate assembly.

17. (Original) The railroad hopper car discharge gate assembly according to Claim 10 wherein said lock assembly further includes a mechanical system carried by said side frame members for positively displacing said stop in timed relation relative to operation of said operating shaft assembly.

18. (Original) The railroad hopper car discharge gate assembly according to Claim 17 wherein said mechanical system includes cam structure disposed adjacent to the side frame members to minimize the effect high torque requirements inputted to said operating shaft assembly have on operation of said lock assembly.

19. (Currently Amended) The railroad hopper car discharge gate assembly according to Claim 18 wherein each side frame member and said end frame member further includes a ~~third leg~~

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second flange portion joined to and extending in generally normal relation away from ~~said first leg portion~~ a lower end of said wall structure, with said ~~third leg~~ second flange portion ~~being spaced from but~~ extending in the same direction as and in generally parallel relation with said ~~second leg~~ first flange portion to add strength and rigidity to said frame.

20. (Currently Amended) The railroad hopper car discharge gate assembly according to Claim 19 wherein a peripheral edge of said cam structure on said operating shaft assembly traverses a path of rotation confined within the spacing provided between said first and second ~~and third leg~~ flange portions of each side frame member.

21. (Currently Amended) The railroad hopper car discharge gate assembly according to Claim 19 wherein a distance of about 9.0 inches is measurable between the said first and second ~~and third leg~~ flange portions of each side frame member and each end frame member.

22. (Currently Amended) The railroad hopper car discharge gate assembly according to Claim 19 wherein the ~~third leg~~ second flange portion on each of the side frame and end frame members of said frame are arranged generally coplanar relative to each other.

23. (Original) The railroad hopper car discharge gate assembly according to Claim 17 further including a lost motion mechanism operably disposed between said operating shaft

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assembly and the mechanical system for said lock assembly for effecting sequential movement of the stop and said gate in predetermined relation relative to each other.

24. (Original) The railroad hopper car discharge gate assembly according to Claim 23 wherein said stop is mounted on and movable with a rockshaft extending parallel to and above said gate, said rockshaft having at least one follower toward one end thereof for engaging a periphery of a cam arranged toward a corresponding end of said operating shaft assembly thereby positively moving said stop regardless of the torque input to said operating shaft assembly.

25. (Original) The railroad hopper car discharge gate assembly according to Claim 10 wherein a tamper seal arrangement is arranged in combination with said operating shaft assembly for accepting a seal for visually indicating whether said gate has been moved toward the open position.

26. (Currently Amended) A gate assembly adapted to be secured in material receiving relation relative to a standard opening defined toward a bottom of a railroad hopper car, said gate assembly comprising:

a rigid frame having a longitudinal axis and including a series of rigidly interconnected side frame members and end frame members which are spaced relative to each other and configured to provide said frame with a ledgeless and generally ~~rectangular~~ square discharge opening sized

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substantially equivalent to the standard opening defined toward the bottom of the railroad hopper car whereby allowing commodity discharged from the opening in the bottom of the railcar to pass through said gate assembly in a substantially unhindered fashion thereby promoting the discharge of commodity from the railcar, with said side frame members and said end frame members defining a bolting pattern generally corresponding to a standard bolting pattern surrounding the standard opening toward the bottom of the railroad hopper car whereby facilitating securement of the gate assembly to the railroad hopper car, with each side frame member and end frame member including a peripheral flange portion joined to and extending outward from an upper end of depending wall structure, and wherein said ledgeless frame further includes a generally centralized support extending generally parallel to the longitudinal axis of said frame with two additional supports disposed to opposed sides of said centralized support;

a gate slidably mounted on said frame for endwise movements between open and closed positions relative to said ledgeless opening defined by said frame and along a generally linear path of movement for controlling discharge of commodity through said ledgeless opening, with said gate being supported by said supports when in the closed position and supported by said frame when moved to the open position, and wherein the linear path of movement of said gate is disposed vertically beneath the flange portion on each side frame member and end frame member of said rigid frame;

seal structure arranged in sealing engagement with a peripheral edge on the upper surface of said gate when said gate is in the closed position, with said seal structure being carried by said

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frame in vertically spaced relation below the flange on said side frame members and said end frame members and configured to promote movement of said commodity therepast when said gate is moved toward said open position;

an operating shaft assembly mounted on frame extension of said side frame members for rotation about a fixed axis, said operating shaft assembly defining a pair of opposed ends disposed for operator access from opposite sides of said frame;

a drive mechanism for operably coupling said operating shaft assembly to the gate whereby rotation of said operating shaft assembly linearly moves said gate between the open and closed positions, with said drive mechanism including a lost motion mechanism operably disposed between said operating shaft assembly and said gate for allowing a predetermined range of free rotation of said operating shaft assembly prior to movement of said gate toward the open position; and

a lock assembly operably connected to said operating shaft and operable in timed relation relative to movement of said gate toward the open position, said lock assembly including a stop mounted for movement between a first position, wherein said stop is disposed in the path of movement of said gate whereby inhibiting inadvertent movement of the gate from the closed position toward the open position, and a second position, wherein said stop is removed from the path of movement of the gate, with said stop being movable from said first position to said second position during the collapse of the lost motion mechanism of said drive mechanism.

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27. (Original) The gate assembly according to Claim 26 wherein each support on said frame is provided with material for enhancing the ability of the gate to slide thereover as said gate moves between the closed and open positions.

28. Canceled.

29. (Original) The gate assembly according to Claim 26 wherein said drive mechanism includes a pair of laterally spaced pinions mounted on a shaft of said operating shaft assembly, with said pinions being arranged in intermeshing relation with racks carried by said gate.

30. (Original) The gate assembly according to Claim 29 wherein said lost motion mechanism of said drive mechanism comprises a slip socket defined by each of said laterally spaced pinions.

31. (Original) The gate assembly according to Claim 26 wherein said frame further includes structure for limiting deflection of said shaft of said shaft assembly relative to said fixed axis when said operating shaft assembly is rotated to move said gate from the closed to the open position.

32. (Currently Amended) The gate assembly according to Claim 26 wherein said lock

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assembly further includes a mechanical system carried by said side frame members for positively displacing said stop in timed relation relative to movement of said gate toward the open position.

33. (Original) The gate assembly according to Claim 32 wherein said mechanical system includes structure disposed adjacent to the side frame members to minimize the effect high torque requirements of said operating shaft assembly have on operation of said mechanical system.

34. (Original) The gate assembly according to Claim 33 wherein said operating shaft assembly includes an elongated shaft supported for rotation about said fixed axis by a pair of operating handles secured at opposite ends of said shaft and rotatably mounted on the frame of said gate assembly.

35. (Original) The gate assembly according to Claim 34 wherein at least one of said operating handles includes a cam arranged for rotation therewith, and wherein the mechanical system of said lock assembly further includes a rockshaft supported by frame extensions, with said rockshaft having said stop mounted thereon for rotation therewith, and wherein said mechanical system further includes a follower secured to said rockshaft and arranged in operable engagement with the cam on said at least one of said operating handles whereby said stop is moved between positions in response to rotation of the operating shaft assembly.



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36. (Currently Amended) The gate assembly according to Claim 35 wherein each side frame member and said end frame member further includes ~~a first leg~~ another peripheral flange portion ~~with second and third leg portions joined to and~~ extending generally normal thereto and toward ~~opposite ends thereof~~ outwardly from a lower end of said depending wall structure such that each end frame member and side frame member is configured to maximize the section modulus of said frame, and wherein the ~~second leg~~ flange portion extending outwardly from the upper end of said wall structure of each end frame member and side frame member defines a series of apertures defining the bolting pattern for said gate assembly.

37. (Original) The gate assembly according to Claim 36 wherein a peripheral edge of said cam of said mechanical system traverses a path of rotation confined within the spacing provided between said ~~second and third leg~~ flange portions of each side frame member.

38. (Original) The gate assembly according to Claim 36 wherein the ~~third leg~~ flange portions extending outwardly from the lower end of the wall structure ~~of~~ on the side frame and end frame members of said frame are arranged generally coplanar relative to each other.

39. (Original) The gate assembly according to Claim 26 wherein a tamper seal arrangement is provided in combination with said operating shaft assembly for accepting a seal for visually indicating whether said gate has been moved toward the open position.